



UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Energy and Macroeconomics, Faculty of Environment



Salary: Grade 7 (£39,355 – £46,735 p.a. depending on experience)

Reporting to: Dr Paul Brockway

Reference: ENVEE1801

Fixed term for up to 30 months to complete specific time limited work

Location: University of Leeds (with scope for hybrid working)

We are open to discussing flexible working arrangements

Research Fellow in Energy and Macroeconomics, School of Earth and Environment, Faculty of Environment

Overview of the Role

Would you like to further your career by applying your quantitative energy and economic skills at one of the UK's leading research-intensive Universities? Do you have an ability to find new insights to urgent global issues, such as the economic implications of reducing energy use, the material requirements of the global energy transition, or the links between economic growth and energy efficiency? If so, this could be the opportunity for you.

The job opportunity is to work as a Post-doctoral Research Fellow on two, related research projects: "Impacts of green growth and degrowth pathways using societal exergy analysis" and "Dynamic Modelling of the needs and potentials of the Earth's mineral and energy resources for the period 2050".

Meeting the 2015 Paris Agreement's ambition relies heavily on reducing global energy use through increased energy efficiency, and also switching to renewables-based energy systems, which will require significant critical materials. At the same time mainstream models assume continued economic growth. The strong link between the economy and energy and material consumption, as well as the needed development of alternative economic (e.g. post-growth and degrowth) pathways translates to an urgent need for new modelling approaches and investigation.

In response, two projects are being led at the University of Leeds by Dr Paul Brockway, exploring these issues using pioneering Exergy Economics analytical methods. This emerging field applies 'exergy' as the thermodynamic-based measure of energy quality: the ability of energy to do physical work. The recent completion by Dr Brockway and colleagues of a country-level primary-final-useful (CL-PFU) energy and exergy database will be utilised directly in these projects.

You will be working with the team at Leeds including Dr Brockway and Dr Emmanuel Aramendia, applying your quantitative energy and macroeconomic skills to key research questions such as: What is the relationship between energy efficiency, energy rebound, and economic growth? How much energy and materials will we need



to meet our future energy service demands? What are the economic implications of a climate compatible reduction in energy consumption? You will benefit from close links to project partners, including Universities at Grenoble and Cambridge, with wider collaboration possible utilising our existing links to researchers who work in countries such as Portugal, France, Spain, Sweden, Austria, and the USA.

Main duties and responsibilities

- Combining data from the CL-PFU database and other macroeconomic and statistical datasets (e.g. IEA, OECD, World Bank), and energy-economy scenarios, developing economic “green growth” and energy “degrowth” scenarios (e.g. evolution of energy efficiencies, economic structure, GDP, employment) for subsequent energy-economy modelling analysis;
- Using quantitative energy-economy modelling methods aimed at discovering new insights into future demands of energy and materials and their linkages to economic output, using methods such as aggregate production functions, input-output analysis, agent-based / system dynamics models, macroeconometric analysis and decomposition analysis;
- Analysing the energy, environmental, and material implications (e.g. final energy use, CO₂ emissions, material requirements, carbon capture and storage requirements) of economic “green growth” scenarios;
- Analysing the economic (e.g. in terms of limits to growth and impacts in labour requirements) and material implications (e.g. critical material requirements) of energy “degrowth” scenarios;
- Generating and pursuing independent and original research ideas in the appropriate subject area;
- Developing research objectives and proposals and contributing to setting the direction of the research project and team including preparing proposals for funding in collaboration with colleagues;
- Evaluating methods and techniques used and results obtained by other researchers and to relate such evaluations appropriately to your own work;
- Preparing papers for publication in leading international journals and disseminating research results through other recognised forms of output;
- Working both independently and also as part of a larger team of researchers, engaging in knowledge-transfer activities where appropriate and feasible;
- Maintaining your own continuing professional development and acting as a mentor to less experienced colleagues as appropriate;



- Contributing to the training of both undergraduate and postgraduate students, including assisting with the supervision of projects in areas relevant to the project.

These duties provide a framework for the role and should not be regarded as a definitive list. Other reasonable duties may be required consistent with the grade of the post.

Qualifications and skills

Essential

- A PhD or near completion - i.e. the initial thesis needs to have been handed in at the point of application in Energy/ecological economics or a closely allied discipline;
- A strong background in the field of ecological economics, industrial ecology, or other heterodox economics concerned with quantitative macro-level energy or climate issues;
- Demonstrable experience of conducting empirically-based macroeconomic research, using methods employing aggregate production functions, input-output analysis, agent-based / system dynamics models, macroeconometric analysis and/or decomposition analysis;
- Experience of working with socio-economic scenarios and/or macroeconomic models such as macroecological models, energy-economy models, climate change mitigation models, Integrated Assessment Models
- Experience of handling large macro-level energy and economic datasets, e.g. International Energy Agency, World Bank, OECD;
- Good programming skills and proven ability to use R and/or Python for modelling and/or data analysis;
- Well-developed analytical skills with a good level of numerical literacy and demonstrated ability to interpret complex data;
- Good time management and planning skills, with the ability to meet tight deadlines, manage competing demands and work effectively under pressure without close support;
- A developing track record of peer reviewed publications in international journals;
- Excellent written and verbal communication skills including presentation skills;
- A proven ability to work well both individually and in a team;



- A strong commitment to your own continuous professional development.

Desirable

- Experience of pursuing external funding to support research;
- Experience of working with input output and supply use tables;
- Technical knowledge of energy conversion in energy systems, energy efficiency, and low carbon technologies;
- Experience of working with energy-economy scenarios modelling analysis.

Additional information

Please note: If you are not a British or Irish citizen, from 1 January 2021 you will require permission to work in the UK. This will normally be in the form of a visa but, if you are an EEA/Swiss citizen and resident in the UK before 31 December 2020, this may be your passport or status under the EU Settlement Scheme.

Please note that this post may be suitable for sponsorship under the Skilled Worker visa route but first-time applicants might need to qualify for salary concessions. For more information please visit: www.gov.uk/skilled-worker-visa

For research and academic posts, we will consider eligibility under the Global Talent visa. For more information please visit: <https://www.gov.uk/global-talent>

Find out more about the [Faculty of Environment](#)

Find out more about the [School of Earth and Environment](#)

Find out more about our [Research and associated facilities](#)

Find out more about Equality and Inclusion in the [faculty](#)

Working at Leeds

We are a campus based community and regular interaction with campus is an expectation of all roles in line with academic and service needs and the requirements of the role. We are also open to discussing flexible working arrangements. To find out more about the benefits of working at the University and what it is like to live and work in the Leeds area visit our [Working at Leeds](#) information page.



Our University

As an international research-intensive university, we welcome students and staff from all walks of life and from across the world. We foster an inclusive environment where all can flourish and prosper, and we are proud of our strong commitment to student education. Within the Faculty of Environment we are dedicated to diversifying our community and we welcome the unique contributions that individuals can bring, and particularly encourage applications from, but not limited to Black, Asian, people who belong to a minority ethnic community; people who identify as LGBT+; and disabled people.

The Faculty of Environment has received a prestigious Athena SWAN silver award from [Advance HE](#), the national body that promotes equality in the higher education sector. This award represents the combined efforts of all schools in the Faculty and shows the positive actions we have taken to ensure that our policies, processes and ethos all promote an equal and inclusive environment for work and study.

Information for disabled candidates

Information for disabled candidates, impairments or health conditions, including requesting alternative formats, can be found on our [Accessibility](#) information page or by getting in touch with us at hr@leeds.ac.uk

Criminal record information

Rehabilitation of Offenders Act 1974

A criminal record check is not required for this position. However, all applicants will be required to declare if they have any 'unspent' criminal offences, including those pending.

Any offer of appointment will be in accordance with our Criminal Records policy. You can find out more about required checks and declarations in our [Criminal Records](#) information page.

